

The Chinese People's Liberation Army: "Short Arms and Slow Legs"

China's rise in power has focused considerable scrutiny on the capabilities and intentions of the People's Liberation Army (PLA). For some observers, Beijing's combination of consistently rising budgets, military modernization, and a more offensive operational doctrine has signaled its intention to assume the status of a world power. To others, like John J. Shulz, "the PLA's long list of systemic problems, coupled with those facing China as a whole, constrain military modernization efforts in ways that may ultimately be insurmountable."¹

To be sure, while every major power's defense budget and military personnel levels have declined substantially since the Berlin Wall came down, the Chinese budget has increased on average approximately 11% per year during the same period. The United States defense budget, for example, has decreased from nearly \$ 300 billion per year at the end of the Cold-War to \$260 billion now. Russia's military now numbers approximately 1.3 million, down from over nine million only ten years ago, and the United States Army now numbers fewer than 480,000, down more than a third from ten years ago. Moreover, China's military doctrine is becoming more assertive, stressing offensive, even preemptive, uses of military power.² For the first time since Mao "stood China up" in 1949, and possibly for the first time ever, China's military doctrine stresses an "offshore military requirement," or "outside the gates" in Chinese military jargon. Some of China's recent military undertakings have done little to assuage outsiders concerns. Recently, in March 1996, China played chicken with two US Navy carrier battle groups near the Taiwan Strait. The Philippines and Vietnam have recently smelled Chinese cordite when disputes over claims to islands in the South China Sea got a little edgy.

The Chinese argue that concerns about their military budget, defense doctrine, or intentions in Asia and the world are unfounded. They claim that China is a defensive power with bona fide security interests. Historically, they contend, the Chinese have been a peace-loving people who have always emphasized defense rather than offense. Defense, they argue, has been the essence of traditional Chinese military thinking from the days of Sun Zi through the Mao Zedong period and to the present.³

The fundamental guideline of the [current] military strategy of the Chinese People's Liberation Army is the active defense. Since the establishment of the People's Republic of China in 1949, no matter how the world situation changed, China's military strategy always remained defensive in nature. China has not occupied a single square inch of foreign soil, nor has it possessed any overseas military base. Furthermore, China has not retained any military presence beyond its own territory. Instead, even though parts of Chinese territory are still occupied by its neighbors, China has shown great restraint and patience as it calls for peaceful solutions to the territorial disputes left by history.⁴

"Short Arms and Slow Legs" examines the PLA's intentions and its ability to threaten its neighbors by considering two variables: China's defense budget and its military doctrine. Defense budgets are only marginal indicators of intentions, but they do offer insights into what kinds of capabilities a military is purchasing and developing. Capabilities are important. Without them, a state cannot act on its intentions. Military doctrine is an excellent source of intent because it provides a state's war preparations guidance, which defines the nature and origin of how it perceives future wars and how the military should prepare to fight those wars.⁵

I expect to find that China's military budget is indeed rising at a rapid and continuous rate. However, when the total amount is measured as a percentage of GDP or by what it can purchase, the US does not have much to be concerned about although China's Asian neighbors do. I will

be assuming—as has been the case historically—that China’s military doctrine reflects the leadership’s strategic intentions. However, Chinese military capabilities have never been adequate to satisfy the leadership’s doctrinal intentions, and I expect that to be the case now and well into the future.

ACCOUNTING FOR MILITARY SPENDING—A CHINESE SHELL GAME

Critics of China’s military expansion highlight two concerns. First, they point out that China’s defense spending has increased substantially since the end of the Cold War, even though every other major military power has cut defense spending dramatically. Second, they contend that China’s official defense budget is seriously understated and deceptive by design. Both critical observations are correct. Nevertheless, when viewed in relative terms, China’s defense spending is not unduly worrisome.

It is clear that the official Chinese defense spending figure has been climbing steadily in recent years.⁶ According to official sources, Chinese defense spending rose approximately 30% between 1980 and 1989.⁷ Another study, conducted by US Congressional analysts, concluded that official military spending increased 159% from 1986 to 1994⁸—although, because official PLA budget figures are nominal and do not account for the effects of inflation, the net defense spending increase in real terms for the period is much lower.⁹ For example, yearly inflation in the PRC averaged about 5.1 percent during the 1980s and accelerated significantly in the 1990s. In 1988 inflation exceeded 25 percent and in 1994 was pegged at more than 40 percent.¹⁰ The net result is that, measured in real (inflation-adjusted) terms, official Chinese defense related expenditures have either barely remained level during the past decade¹¹ or have actually declined.¹² Nevertheless the *official* defense budget does not fully represent actual Chinese military

spending.¹³ Indeed, unofficial military spending estimates vary in range from US\$10 billion to US\$86 billion for 1995.¹⁴ The discrepancies between official and unofficial estimates lie in the method used for calculation and in what is and is not counted.¹⁵

Most China analysts now use purchasing power parity (PPP) to calculate Chinese budget figures. Purchasing power parity recognizes that the value in purchasing power for items such as food, clothing, and military supplies in China is greater than in developed countries by as much as a factor of three.¹⁶ Therefore, if the official 1996 military budget figure of \$8.7 billion is multiplied by three, the correct budget figure in PPP terms is a little more than \$ 26 billion. The military also benefits from a dual price system—there is the market price and the much lower government price for select customers. For example:

The Chinese State Council has always ordered the state-run companies and enterprises to sell a huge amount of consumer goods, including cars, steel, coal and cement, to the army based on the governmental price; and simultaneously, it has also requested them to appropriate various types of materials to the army for its actual needs without charge.¹⁷

Unlike more transparent military budget figures in the West, Chinese figures do not include a number of important (at least by Western standards) items. For example, military-related research and development costs are not included in the defense budget, but instead are funded by the Commission of Science, Technology and Industry for National Defense (COSTIND)¹⁸ and various ministries of the State Council. The Ministry of Energy is responsible for research and development spending for nuclear weapons; the Ministry of Aeronautics for the development of all military planes, including new jet fighters; the Ministry of Astronautics for all rockets, satellites, and missiles; the Ministry of Transport for all military ships; the Ministry of Electronics for military electronic equipment, tanks, cannons, and other light

weapons; and the State Commission on National Education is responsible for the spending of all military schools and colleges, including the National Defense University and the University of Military Science and Technology.¹⁹ Other costs, including demobilization costs, travel expenses, and retirement salaries, are not included in the Chinese military budget, like they are in Western military budgets.²⁰

Proceeds from overseas arms sales and earnings from the 20,000 PLA-owned industries are not included in the official \$8.7 billion figure. In past years, this amount was substantial. However, overseas arms sales have been reduced from more than \$ 4.7 billion at their peak in 1987 to less than \$ 100 million in 1992.²¹ The amount of income from PLA-owned industries is also under debate. Some believe that twenty-five percent of the PLA's operating budget derives from the 20,000 PLA-owned industries, while others insist that, collectively, these industries operate at a loss.²² In the future this may be a non-debate, because PLA leaders, citing an adverse impact on morale, have recently announced that most military units will have to divest themselves of their businesses.²³

A majority of China analysts believe that an accurate figure for Chinese annual military expenditures is in the \$35 to \$40 billion range, a substantial amount by any calculation. However, *relative* to the United States (\$260 billion) and other major powers like Japan (\$56 billion for a military of 160,000), Chinese military spending seems within reason, given the size of the country and the PLA's responsibilities. And, if the linear rise in spending is measured from 1979 instead of 1988, which was a comparatively small budget year, the rise in spending would come to only about \$ 230 million a year, half the cost of one US B-2 bomber. The Chinese figures must also be seen in a regional perspective.

Given the dramatic economic growth the country has achieved, the percentage of GNP devoted to military expenditures has declined steadily, from 5.8% in 1984 to 2.4% in 1994. Similarly, while still quite

substantial, particularly in relation to other powers in the region (except Russia and probably North Korea), military expenditures as a percentage of central government expenditures have declined steadily from 36.1% in 1984 to 18% in 1994. One must also consider the impact of China's population on any assessment of military capability . . . only India and Vietnam spend less per capita on the military than China among the powers in the region.²⁴

Two other factors are important in keeping the Chinese defense budget and military expenditures in perspective. First, even if a recent estimate by the International Institute of Strategic Studies of 1992 PRC defense spending is doubled, "per capita outlays would still be (in 1985 dollars) less than \$40, contrasted, in the same year, with \$136 for Japan, \$268 for Russia, and \$964 for the United States."²⁵ Second, given increased financial opportunities in private enterprise in China during the past decade, the PLA has had to increase soldier pay and quality of life or risk losing new recruits to the civilian sector. For example, when the author first traveled to China in 1979, the PLA recruiter was the most popular visitor to any village. The three dollars a month and three meals a day he offered were highly coveted by China's youth. Today, the PLA recruiter has a difficult time meeting recruitment goals despite increased pay, allowances, and benefits.

Clearly, Chinese defense spending warrants attention and closer scrutiny. Those fearful of a more powerful and potentially belligerent China are correct to point out that Chinese military spending has increased substantially in the last decade. However, after inflation is accounted for, Chinese defense spending increases have been modest. And, when measured in per capita terms or percentage of GNP relative to other major powers and regional states, Chinese defense spending does not appear so ominous.

PAST DOCTRINE

Historically, Chinese military doctrine has been a very good indicator of Chinese leadership's perception of the threats to China's security and their view of how the Chinese military should respond. This has certainly been true since the Communists won power. The People's Liberation Army knows what it is supposed to do and how it supposed to do it. The dilemma for the leadership has been that they have never had the wherewithal to carry out the doctrine's intent. At no time in the past 49 years has the PLA been able to match its primary adversaries in the sophistication of weapons and equipment.²⁶ This dilemma is more acute today, than ever. "China's military technology deficiencies ensure that its armed forces will enter the 21st century with armaments just beginning to incorporate technologies from the early 1970s."²⁷ In the past, Chinese military planners have been able to compensate for these deficiencies by combining traditional "trading space for time" and "attacking a superior enemy with inferior force" methods with China's strategic attributes: a large army, large land mass, and nuclear weapons.²⁸ However, the nature of modern, post-Cold War warfare—short, violent, often technical—and China's perceived security requirements beyond its shore (outside the gate) diminish the utility of these compensating factors.

Past Doctrine: 136 BC-1949

For the first 3,000 years of China's history, the threat to China was from its immediate periphery. "Barbarians" of various stripes, would test the mettle of China's central government with forays up to and sometimes through "China's gates." In 138 BC, Emperor Han Wudi sent an expedition from China proper to seek allies among "friendlier barbarians" to help him secure his northern borders against the Xiongnu, who were ravaging China's northwestern frontiers. Rebuffed in this attempt to gain cooperation, the Han emperor secured his borders by overrunning and occupying much of eastern central Asia (the "western

regions” in Chinese lexicon) by 100 BC. Combining diplomacy with military might, the Chinese adopted a policy of divide-and-rule, or “using barbarians to control barbarians,” sowing and playing upon dissension among the region’s native groups.²⁹ The western regions, which included what were later to become Xinjiang, were used as a defensive buffer against alien invaders from beyond the Great Wall. Increasingly, Chinese hegemony in the western regions and the security it provided became identified with the legitimacy of succeeding dynasties. In Confucian terms, one of the reasons the Emperor kept the “Mandate of Heaven” was his ability to occupy the western regions and keep the barbarians “outside the gates,” thus providing security for China proper.³⁰

Chinese hegemony over their periphery increased or declined along with the strength of the dynasty in power. During weak dynasties, indigenous peoples rebelled, threw out the Chinese, and encroached on “China’s gates.” During strong dynasties, the Chinese reasserted their suzerainty and provided security from the “barbarians” by keeping them “outside the gates” of China proper. This method enabled China to double its land area by the middle of the eighteenth century and effectively ended the troubles with barbarians and fixed the borders with Russia and the Southeast Asian states. China was not always successful in keeping the barbarians out. The Mongols defeated the Chinese in 1323 and ruled China for eighty-six years. In fact, when China achieved its territorial apex in 1768, it was ruled by the Manchus who reigned until the fall of the Qing Dynasty in 1911.

According to PLA lieutenant general Li Jijun, China fought thousands of wars during its 5000-year history to keep the country unified.³¹ One might think, then, that China has a military history steeped in tradition and that military heroes abound in China’s rich literature. Actually, the opposite is true. In traditional China, warfare was considered an abnormal state of affairs and the profession of arms was held in low esteem.³² Confucius likened war to an insect that eats up

resources, and mothers discouraged their sons from joining the military by telling them “good iron is not used for nails and good men are not used for soldiers.” No family in ancient times would willingly give up a son to the profession of arms. Armies were raised to confront situations requiring military force and were quickly disbanded when the situation was resolved.³³

It may seem strange at first that a state with a weak military tradition is renowned for its military strategists. But, on second thought, it is not so improbable; strategy is, in fact, the reason the Chinese were able to prevail so often. What they lacked in military culture, they made up for in applied strategy and doctrine. Tai Gong and Sun Zi were among the first, and are still the most famous, ancient Chinese strategists. There were others. “According to a recent incomplete survey, more than twenty-three hundred titles of military writing from ancient China have survived. About fifty of them are well-known and still enjoy a broad readership among military leaders.”³⁴

Indeed, the teachings of the ancients have had a considerable influence on modern Chinese strategists, not least on Mao Zedong, who was perhaps the leading practitioner of the ancient precepts in the modern era. Even in the recent evolutions of China’s military doctrine, the influence of the ancient strategists is evident. Two mainstays of ancient Chinese war-fighting doctrine are particularly evident: “trading space for time” and “defeating a superior enemy with an inferior force.” The first refers to luring the enemy so deep that it is overextended and can be defeated at a time and place of one’s choosing. The second has many variants, but in general terms the Chinese try to isolate small formations of the enemy, overwhelm them, and move on to others. The cumulative effect of several small victories is equal to or greater than defeating the enemy in one main battle, and defeat is usually avoided.

China’s regional hegemony and its ability to prevail on the battlefield ended with its defeat at the hands of the British in the 1842

Opium War. After the war, China was virtually a semi-colonial country, so weakened by external exploitation and internal strife that it almost lost its five-thousand-year-old national identity.³⁵ The ultimate humiliation came at the hands of the Japanese, a former tribute state, who defeated China in 1895 and annexed Taiwan and Manchuria. Unlike China, Japan was able to master the industrial and technological attributes of modern warfare and adopt Western military doctrine as its own.

China's history of external exploitation ended after World War II when China became one of the five leading allies and a charter member of the United Nations Security Council. However, it took four years of applying the "trading space for time" and "defeating a superior enemy with an inferior force" doctrines before Mao Zedong could end China's internal strife by achieving victory over the Nationalists in China's civil war. On October 1, 1949, Mao proclaimed to China and the world that China had "stood up" and would never be humiliated by an external power or divided by internal disorder again.

Past Doctrine: 1949-1964 —"People's War"

*The enemy advances, we retreat;
The enemy camps, we harass;
The enemy tires, we attack;
The enemy retreats, we pursue.*³⁶

According to Ellis Joffe: "Military policy is shaped by a variety of considerations, but it is the leadership's perception of threat that is paramount. The nature of the threat and the response to it are decisive in determining the doctrine of the armed forces and their development."³⁷ In 1949, Mao clearly perceived the United States and the West to be China's immediate threat and determined that "people's war" would be the military doctrine the PLA would employ to defend China.³⁸ "People's war" anticipated a land invasion by the United States and its Western allies. "The approach was to gain victory after a long war of attrition by trading space for time."³⁹

In the dark days of the war against Japan, the Chinese used to console themselves with a grim joke. One Chinese asks another about the results of the last battle against the Japanese:

“We lost 1,000,000 men,’ is the answer.
‘How many did the Japanese lose?’ is the next question.
‘One hundred,’ is the answer.
‘Marvelous,’ is the retort. ‘We’ll soon have them on the run.’⁴⁰

In 1949 China had three strategic assets. The most important, as the joke implies, was a population of approximately six hundred million people. The second asset was large land area that allowed the defender to trade space for time. The third was an alliance with the Soviet Union.

“People’s war” was built around these assets. In Mao’s model, the PLA and paramilitary forces, supported by the populace, would conduct protracted war against any invader. Initially, the PLA’s main forces, using conventional tactics, would carry out a strategic retreat supported by guerrilla-type operations until the invading forces were overextended and dispersed. PLA forces would then be reconfigured and concentrated to annihilate the enemy in detail.⁴¹

In Mao’s opinion, the “people’s war” strategy was valid even in the event of a nuclear attack, as Mao suggested to Andrei Gromyko in Beijing at the height of the problems with the US over Quemoy in 1958:

If the USA attacks China with nuclear weapons, the Chinese armies must retreat from the border regions into the depths of the country. They must draw the enemy in deep so as to grip US forces in a pincer inside China. . . . In the event of war, the Soviet Union should not take any military measures against the Americans in the first stage. Instead, you should let them penetrate deep inside the territory of the Chinese giant. Only when the Americans are right in the central provinces should you give them everything you’ve got.⁴²

Ironically, though “people’s war” was Chinese military doctrine for more than a decade, they rarely employed it; and when they did, it did not work very well. In Korea, save for early successes, when the use of deception enabled the PLA to move more than 300,000 troops into Korea undetected, Chinese units had a difficult time applying “people’s war” principles because they could not take advantage of their numerical superiority and had no space to trade for time. The PLA’s massed, unsupported (air or artillery) attacks against vastly superior American firepower did not work and in most cases led to disastrously high personnel and equipment losses.⁴³ In fact, Korea was a wake-up call for the PLA and made its leaders painfully aware of the need to modernize weaponry, combat skills, and military doctrine before again engaging a modern military force.⁴⁴

Past Doctrine, 1964-1983: “People’s War Under Modern Conditions”

Two factors changed China’s strategic thinking and military doctrine in the 1960s and 1970s. In 1964 China acquired another strategic asset, nuclear weapons. However, they lost the Soviet Union as an ally and strategic partner; in fact, the Soviet Union replaced America as China’s principal foe. Nuclear weapons gave the Chinese the capability to change their strategy and the Soviets gave them a reason.

For most of the 1960s and 1970s, Beijing’s national military strategy was based primarily on defending China against a possible Soviet attack. During that period, the PLA compensated for its outdated capabilities by using concepts of operations based on protraction, attrition, and the threat of nuclear retaliation or—“people’s war under modern conditions.”⁴⁵ Continental defense was still the core strategy, but it included the ability to conduct offensive operations short distances outside China’s borders—fighting “outside the gates,” as Mao would say.⁴⁶ “People’s war under modern conditions” differed from people’s war in two ways. First, the intent of the new strategy was to defeat the

adversary closer to China's borders, avoiding an endless retreat into the interior.⁴⁷

Second, cities would have to be defended because cities, and not the countryside, supported the logistical requirements of the Chinese armed forces.⁴⁸ Nonetheless, the new strategy still relied on the PLA's massive size, and its *ultimate* defense was to fall back into China's interior and exhaust its adversary (the Soviets) through protracted war.⁴⁹

Although "people's war under modern conditions" was China's military doctrine for more than a decade, it was never used in conflict. PLA operations in the 1979 Sino-Vietnamese war were the most extensive and costly since the Korean War.⁵⁰ But despite the new "people's war under modern conditions" strategy, Chinese equipment and combat performance had not improved since Korea. "In comparison with other wars of the 1970s," says Gerald Segal, "the Sino-Vietnamese war could have taken place thirty years earlier for all the modern equipment or tactics that were used." It was an ugly affair. One hundred eighty thousand of China's best troops fought 75,000-100,000 Vietnamese border and militia troops, and lost.⁵¹ Interestingly, despite the initial tactical surprise of a five-pronged advance, the PLA did not use its manpower advantage, trade space for time, or use deception techniques. The Sino-Vietnam War was largely a conventional affair, in which the two enemies engaged in largely set-piece frontal assaults on well dug-in positions,⁵² and the Chinese did not do very well.

The Chinese were shocked to discover that the traditions of the Long March, World War II and Korea were not enough to meet the Vietnamese, with their modern Soviet (and US) equipment and with the confidence gained at the expense of American forces. . . . The PLA lacked adequate communications, transport and logistics and were burdened with an elaborate and archaic command structure. Their maps were 75 years old. Runners were employed to relay orders because there were few radios (and those they had were not secure). The PLA suffered more than

60,000 casualties, including 26,000 killed. Thus in heavy fighting [for three months] in 1979, . . . the Chinese had nearly half as many soldiers killed in action in Vietnam as the US lost in 10 years.⁵³

It would be unfair to imply that some in China's hierarchy did not know the PLA's limitations. In the mid-seventies some Party and military elites voiced concern, somewhat hesitantly, over the PLA's ability to defend China in modern war. Deng Xiaoping was one of them and, in 1975, was purged for his efforts.⁵⁴ Intra-party struggles precluded PLA modernization until 1978, when Deng was rehabilitated for the third time and a new military modernization program was revealed as the fourth component of the highly touted "Four Modernizations Program."⁵⁵ However, because it was the fourth priority, the military modernization did not receive much more than planning consideration until the debacle in Vietnam.

Past Doctrine, 1980—"Local Limited War"

After China's Vietnam war debacle, Deng Xiaoping made a scathing speech in 1979 to the Central Military Commission, China's highest military body, asserting that the PLA's weaknesses in education, training, organization, doctrine, tactics, and management procedures meant that the PLA could not maintain or employ advanced hardware even if the nation could afford to supply it.⁵⁶ For the next several years the PLA focused on the organizational, doctrinal, and human aspects of military modernization, while waiting for modern equipment and advanced systems.⁵⁷

Over the same period, as the world situation changed, Beijing's analysts concluded that reduced superpower influence meant that there was increased probability of small-scale wars flaring up along China's periphery. This would especially be the case, the Chinese thought, where border and territorial disputes had been held in check by the dynamic of superpower confrontation.⁵⁸ In addition, they felt that the increasing

scarcity of natural resources as a result of economic development could lead to territorial disputes.⁵⁹ Furthermore, the Chinese forecast correctly, and before other analysts, that ethnic conflict would result from a lessening of superpower tensions.⁶⁰

The Chinese attitude toward the Soviets is important in that by 1983, the Chinese had basically written off the Soviet threat. In part, this change was because of the Reagan military buildup, which convinced the Chinese that the US would prevail in any contest with the Soviet Union. There was also an emerging perception among Chinese politicians and military leaders that the Soviet Union was a “paper tiger.” If the Russians could not defeat a ragtag bunch of Afghanis, went their logic, why should they be feared? Based on this analysis, China’s defense policy shifted from a strategy designed primarily to deter the USSR to a strategy that could win localized wars around China’s borders and maritime territories.⁶¹ “The distinguishing characteristic of the new strategy was its intent to avoid retreating into the interior by defeating the adversary close to China’s borders, or “closer to the gate” in Mao parlance.

The operational requirements for limited war were far more demanding than in previous doctrines. Under the traditional approach to “people’s war” and “people’s war under modern conditions,” war-fighting strategy was divided into three phases: defensive, stalemate and counter-offensive. “During the defensive phase, the entire country would be mobilized to conduct a protracted war of attrition.”⁶² In a modern limited war, mobilizing the entire population for war was no longer feasible. Protraction and attrition were out, speed, mobility, and lethality were in. Weapons systems for the new strategy had to have greater range, accuracy, and be able to operate at night in all weather conditions. Military doctrine and capabilities, especially for the Navy and Air Force, had to adapt to a new defensive perimeter that extended 600 miles from China’s shore.⁶³

China's military made some gains in accommodating the new demands. They modernized their education and training system, reduced their ranks by a million, reduced the number of Military Area Commands (MAC) from eleven to seven, closed or combined several military academies, began to modernize doctrine, and entered upon a modest, but inadequate, program of weapons and equipment modernization.⁶⁴ Indeed, the inability of China's weapons modernization programs to keep pace with changes in security strategy was one of two related difficulties that developed over four decades. The other was an expanding defensive perimeter. The willingness during the "people's war" period to engage the enemy deep within China (inside the gate) changed to a "local limited war" policy of engaging the enemy six hundred miles off China's shore (outside the gate). The incongruities are obvious. The modernization program could not keep pace with the expansive defense policy, and China's strategic advantages—a large land mass and population, and nuclear weapons—were no help. Historically advantageous operational tactics, such as the use of deception and the hit-and-run techniques that allowed the Chinese to "shape the battlefield," were supplanted by a willingness to engage the enemy in conventional battles at times and locations chosen by the enemy.

These problems and incongruities were not lost on the Chinese leadership, and an attempt was made in the late 1980s to rectify at least the modernization problem by purchasing systems and know-how from foreign sources.⁶⁵ Then, in 1991, the Chinese witnessed an event that again forced Beijing to change its military strategy. That event was Desert Storm.

PRESENT DOCTRINE: LOCAL WAR UNDER HIGH-TECHNOLOGY CONDITIONS

For China, Desert Storm was a wake-up call of major proportions. Before the war, the PLA high command predicted that US forces would become

bogged down as the Soviets did in Afghanistan. They were surprised, and the Chinese leadership's reaction to the high-tech war waged by the United States was deep and lasting. They were particularly impressed with the speed and precision of the US attacks and the lack of collateral damage inflicted on civilian targets. They were "stunned," and "every element of the allied strategy left the PLA aghast and hammered home as never before the backwardness of the PLA."⁶⁶ "The Gulf War convinced Chinese military strategists that the war of the future is most likely to be localized, fought to achieve limited political objectives, and won by whichever side is better able to concentrate high-technology force at some distance from its national borders in a decisive strike."⁶⁷ The reaction to the war was fairly intense. At least seven high-level meetings between January and May 1991 addressed the implications of the Gulf War for China.⁶⁸ Within four months of the war's conclusion, the Chinese leadership adopted a "qualitative military strategy for post-Cold War national security" and replaced "limited local war" as the supporting doctrine with "limited local war under high-tech conditions."⁶⁹

After the Gulf War the PLA was forced to confront the elements of modern warfare:

precision-guided munitions; stealth technology; electronic countermeasures; precision bombing of military targets with minimized collateral damage; airborne command and control systems; in-flight refueling; the minimum loss of attack aircraft and life; the use of satellites in anti-ballistic missile defense, strategic targeting, and intelligence gathering; early warning and surveillance; the use of command centers half a world away; the use of anti-ballistic missile defense; massive airlift and rapid deployment . . . and the list goes on.⁷⁰

China understands what is required to modernize its military. Chinese publishing houses have been very busy turning out large quantities of books addressing the high-technology problem.⁷¹ A review of China's press and other open Chinese literature suggests that a number

of high-tech systems and technologies are receiving considerable attention, including C3I systems, cruise missiles, satellite-based navigation systems, advanced radar, opto-electronics, lasers, precision guidance, optical fiber transmissions, and thermal imaging and guidance.⁷² “This list does not differ markedly from a Russian document purporting to represent an official ‘wish list’ of items China would like to procure from Russia.”⁷³ Think tanks in Beijing are also studying the problem and making recommendations to their constituents in the government and military. Government officials and PLA leaders have announced ambitious plans for enhancing all the military services’ capabilities.⁷⁴ “It is important, however, not to confuse ambition with capability—the PLA’s doctrinal desires at present stand in sharp contrast to its severely limited capabilities.”⁷⁵ Indeed, how China operationalizes “local war under high technology conditions” is being viewed with keen interest. Obviously, the rate at which China can accomplish its doctrinal objectives will be indicative of its capabilities to become more assertive in the region and may even offer clues to Beijing’s intentions. For now, it appears that doctrinal and equipment improvements are progressing very modestly. In 1993 one noted China watcher felt that by 2000 China could be building MiG-31 fighters and have a significant fleet of fighter planes and bombers that can be refueled.⁷⁶ In both cases the Chinese have come up short, indicating the complexity of revamping their military establishments.

At first glance, China’s military order of battle looks impressive.⁷⁷ Collectively the People’s Liberation Army (PLA), the People’s Liberation Air Force (PLAF), and the People’s Liberation Navy (PLAN) have three million personnel, 8,000 tanks, 5,700 fighter aircraft and bombers, 50 submarines, 55 destroyers and frigates, and 14 inter-continental ballistic missiles (ICBMs).⁷⁸ However, according to military observers, it is much less impressive in the field.

Much of the equipment is obsolete; command, control and communication capabilities are weak; combined-forces exercises are limited, as are power projection capabilities. In the imbroglio of 1996, most expert observers believed that Taiwan could repel a cross-strait invasion without US Navy involvement. China's ability to fight a serious engagement in the South China Sea is also doubtful. A May 1997 US Navy report concluded that the Chinese Air Force and Naval Air force are "obsolescent and incapable of mounting any effective large-scale sustained air operations."⁷⁹

According to "limited war under high-technology" doctrine the PLAAF and PLAN have priority because they implement the new doctrine's long-range (600 mile) force projection requirement and will have important airlift and sea lift responsibilities.⁸⁰ This has resulted in a growing emphasis on the acquisition of advanced airplanes and ships, anti-ship defenses, and land-and sea-based anti-air defense systems.⁸¹ In 1991, when "limited war under high-technology" was first articulated, both the air force's and the navy's capabilities in these areas was limited. They are not much better now.

People's Liberation Army Air Force (PLAAF) and the People's Liberation Navy Air Force (PLANAF)

The PLAAF is in the worst shape. Ninety percent of its aircraft are old Soviet designs from the 1950s and 1960s. Although the PLAAF has approximately 400 J-5s (MiG 17s), 500 J-7s (MiG 21s), and 100 J-8s in its inventory, the mainstay remains the J-6—a Chinese version of the MiG-21.⁸² There are 3,000 J-6s in the PLAAF inventory. The airplane is at least twenty years out of date and no match for any of the principal interceptors flown by the US, Japan, Russia, South Korea, Taiwan, India, or many of the ASEAN states.⁸³ This is also true of China's principal bomber, the H-6.⁸⁴ "Not only are the aircraft ancient, but China lacks aerial refueling capabilities and Airborne Warning and Control System (AWACS) aircraft."⁸⁵ Without aerial refueling, Chinese planes are limited to the range of their onboard fuel tanks. Without AWACS,

Chinese pilots can only locate targets visually or by trying to use their 1960s vintage on-board radar.⁸⁶

The PLAAF and PLANAF cannot rely on China's aircraft industry for indigenous production of modern fighters and bombers, or to improve existing platforms without foreign assistance.⁸⁷ The Chinese do manufacture the J-8 and J-8II aircraft, which are based on early 1960s Soviet designs. They are trouble-prone aircraft with a poor weapon suite and an inefficient engine. "At best, the J-8-II can be compared with an early model (1960s) US F-4 Phantom."⁸⁸ In fact, after twenty-six years the J-8-II is still in the development stage, has resulted in only about 100 fighters deployed, and meets none of the requirements of the PLAN.⁸⁹

"Thus far, China's aerospace industries have not been able to produce a successful fighter."⁹⁰ The first locally produced addition to China's air power may be the domestically developed J-10 fighter bomber which has been in the design stage for more than a decade. "This multi-role fighter is modeled after the US F-16 in its interceptor and ground attack roles—and eventually could be nuclear-capable, as is the F-16."⁹¹ Apparently, Chinese engineers are trying to clone the J-10 from a single F-16 provided by Pakistan, and with assistance from Israeli engineers associated with Israel's failed Lavi project.⁹² "It must be said that China's record on reverse engineering aircraft has not been good, and it remains in doubt whether this plane will ever join China's interceptor inventory (it is at least two years away from flight testing and seven to eight years away from deployment, if all goes well)."⁹³

China's current bomber force is outdated, but it does not appear that the PLA plans to replace its aging bomber fleet anytime soon.⁹⁴ With the retirement of the H-6 (Il-28) aircraft, both the PLAAF and the PLANAF are left with the H-6 (Tu-16) as their only dedicated bomber. The (Tu-16) entered Soviet service in 1955, and Chinese production began under license in 1959.⁹⁵ Weapons, avionics, and radar upgrades to the H-6 have extended its utility, but it is still not capable of deep-strike

missions requiring penetration of sophisticated anti-aircraft systems. Without any plans to produce or purchase a modern long-range bomber, deep land-target strikes will have to be assigned to missiles.⁹⁶

China has purchased forty-eight Su-27 fighters (including two trainers) from Russia. The Su-27 (designated J-11 in China) is a modern multi-role aircraft, comparable in performance to US F-16/F18 models. In 1996 China reached an agreement with Russia to co-produce additional Su-27s, totaling perhaps two hundred, possibly including the upgraded Su-37 version.⁹⁷ Currently, the forty-eight Su-37s on hand are the only modern combat aircraft in the Chinese inventory.

Viewed in total, China's air power has not developed to the level where it can project the force required for execution of "local war under high-technology" doctrine.

Of its 5000 fixed-wing combat aircraft, more than 90 per cent are obsolete. Only the Su-27s are truly modern. To these can be added around 100-150 J-8s and J-8 IIs—a trouble prone aircraft. . . . Beyond the limitations presented by its equipment, with no operational AWAC or aerial refueling the PLAAF and PLANF would have great difficulty conducting effective air combat operations much beyond 300 miles.⁹⁸

The PLAAF's technological problems are exacerbated by the notoriously poor training of Chinese pilots. "Levels of proficiency in all-weather and over-ocean navigation normally expected of pilots in militarily advanced countries are unknown or poorly developed in the PLAAF and PLANAF."⁹⁹ If they are lucky, bomber pilots fly approximately 80 hours a year; fighter pilots 100-110 hours; and ground attack pilots 150 hours.¹⁰⁰

Obsolescence is another major problem facing the PLAN. For example, 3,000 of its 4,500 post-Korean War vintage aircraft will have to leave service in the next five to ten years.¹⁰¹ About 2,700 are the workhorse F-6s (MiG-19s).¹⁰²

In its present state, it does not appear that the air arm of the Chinese military can meet the requirements of “limited war under high-technological” conditions, nor will it be able to in the near future. At best, the PLAAF and the PLANF can operate 300 miles from China’s borders, and then only for a short time. Purchasing newer aircraft from Russia may accelerate the ability of China’s air arm to meet its doctrinal requirements. But, the limited purchases to date have had little impact, and it is unclear whether China’s military and defense industry has the ability to maintain the advanced equipment it is importing.¹⁰³

People’s Liberation Army Navy (PLAN)

“Local war under high-technological conditions” doctrine requires the PLAN to extend its operational area from China’s coastal waters to somewhere between 200 and 400 nautical miles, or even further if defense of China’s territorial claims in the South China Sea is a problem.¹⁰⁴ The PLAN’s goal in 1991 was to have an off-shore capability by 2000 and a “blue water” capability by 2050, but it appears that they are behind schedule. China’s naval warfare officers and analysts are acutely aware of the PLAN’s limitations and the technological challenges the navy faces in trying to satisfy the requirements of “local war under high-technology” doctrine.¹⁰⁵

China possesses the third largest naval fleet in the world. However, like its air force, China’s fleet is composed of aging, Soviet-designed equipment that cannot compete with Western navies or, on an individual ship basis, with many of the other navies in Asia.¹⁰⁶

Taken as a whole, PLAN combatants suffer from shoddy construction, lack of power, and minimal defense capabilities against attack. ASW technologies are poor and capable of only short-range detection. . . . These weaknesses are compounded by underway replenishment inadequate to support a significant number of ships for extended operations. Amphibious warfare operations are so constrained by the age and limited lift of most PLAN amphibious ships that the

navy is incapable of conducting a major opposed landing.

Capping these deficiencies is the distance limitation of the PLAAF and PLANAF mentioned previously. Neither can sustain combat air patrols over naval operations for any extended period beyond 200-300 miles from China's coast.¹⁰⁷

The workhorses of the Chinese fleet are the 19 destroyers and 37 frigates in its inventory, which include two new classes of surface combatants, the 4,500-ton *Luhu*-class guided missile destroyer (DDG) and the 2,750-ton *Jiangwei*-class guided missile frigate (FFG).¹⁰⁸ Neither are state-of-the art by any means, but both have anti-submarine warfare (ASW), ship-to-ship missiles (SSM), and surface-to-air missiles (SAM).¹⁰⁹ These vessels, though clearly superior to others in the Chinese fleet, are few in number, and the navy's backbone forces will remain the 17 older *Luda*-class destroyers and *Jianghu*-class frigates. Both the *Luda* and *Jianghu* classes have been undergoing modernization programs using French systems built under license in China. Major improvements include fitting SSMs to the vessels and installing towed sonar and better missile and gun control systems. The principal equipment weakness in these vessels is also that of the *Luhu* and *Jiangwei*: the lack of a long-range SAM system and effective defense against sea-skimmer anti-ship missiles.¹¹⁰

The number of Chinese submarines is quite large compared with other navies in Asia. The Chinese claim to have 89 tactical submarines: 5 nuclear powered attack submarines (SSNs), 1 diesel powered cruise missile submarine (SSG), and 83 diesel attack submarines (SSs).¹¹¹ It is unlikely however, that much more than fifty per cent of them are operational at any one time. Five Chinese constructed *Han* nuclear (SSN) submarines appear to be operational. These were launched in the 1970s and 1980s, and some are capable of firing surface-to-surface missiles out to approximately 22 nautical miles. These vessels are now

fitted with French electronic systems measures (ESM), which increases their long-range targeting capabilities. Unlike American SSNs, Chinese models must surface to fire their missiles, making them vulnerable to counterattack.¹¹² The majority of the PLAN's attack submarines (SSs) are based on thirty year-old Soviet *Romeo* designs, and most of these older models spend little time at sea each year due to an insufficient number of trained personnel.¹¹³

China has recently increased its attack submarine capability by purchasing four *Kilo* class submarines from Russia. The *Kilo* is a modern diesel-electric boat designed by the Soviets for coastal defense and is capable of employing ASW and antisurface warfare (ASUW) torpedoes and mines. The first two *Kilos* arrived in China in 1994 and 1995.¹¹⁴

Much has been written about China's desire to acquire aircraft carriers, including reports that the PLAN was negotiating with a Ukrainian shipyard to purchase the 67,000- ton *Varyag* and had already started a school for aircraft carrier captains.¹¹⁵ Most analysts doubt the validity of these reports because China does not have the wherewithal to employ an aircraft carrier and will not for some time. For example, China has no carrier-capable aircraft and no carrier-qualified pilots. If China did deploy a carrier, support and supply of the ship would require every support ship in the Chinese navy, and carrier perimeter defense would take a major proportion of the current fleet of frigates and destroyers.¹¹⁶

However, "the enormous investment (procurement, maintenance costs, and personnel training) required to deploy an aircraft carrier battle group . . . makes it an unattractive proposition unless its prospects for survival are good."¹¹⁷ Certainly China's current land-based air force is not up to the task of protecting a carrier battle group. To the extent the PLAN, by combining longer-range aircraft, in-flight refueling, and AWACS-assisted command and control, is able to extend the range of its

operations for the foreseeable future, the opportunity costs of deploying a vulnerable carrier now are forbiddingly high.¹¹⁸ Furthermore, “although the deployment of a carrier is clearly many years in the future, even now China’s foreign policy community questions the project because of the fears it would raise about China’s ambitions in the region.”¹¹⁹

PLAN force development and modernization trends indicate its interest in developing the capabilities necessary to satisfy doctrinal requirements. However, several weaknesses remain that will prevent PLAN from achieving its objectives any time soon. For example, over the past several years there has been no sign that naval acquisitions have been accelerated. Inadequacies in underway replenishment and sustained air cover for operations beyond the range of land-based aircraft still exist. Weaknesses remain in effective air defense systems and ASW systems capable of hunting modern, quiet submarines. “Moreover, the acquisition of new ships and modernization of existing classes have proceeded very slowly.”¹²⁰ Thus, in much the same manner as the Chinese air force, which is marked by its size and technological obsolescence, the PLAN remains fundamentally a very large coastal defense brown water fleet equipped with aging ships and aircraft.¹²¹ According to recent reports, Russia is going to sell China two *Sovremennyi*-class guided missile destroyers, a larger, less vulnerable, and much more lethal ship than any in PLAN. This will alleviate PLAN’s modernization problems to some degree.¹²² But, while PLAN moves toward its goal of developing a navy capable of regional operations, other navies in the region are modernizing their forces, which in some cases are already superior to China’s.

People’s Liberation Army (PLA)

The PLA is the largest military component in China (2.2 million personnel), and is the last priority for resources under current doctrine. The PLA is essentially a large infantry force organized into 24 combined arms Group Armies (GA’s). Beyond the PLA’s outdated weaponry and

other equipment, its major weaknesses include poor mobility and lack of experience in the conduct of joint warfare, especially the lethal synergies created by merging air and ground operations into a single effort.¹²³

According to one analyst testifying before Congress: “The Chinese ground forces are oversized and infantry-heavy . . . and plagued by low mobility, obsolete weaponry, poorly educated officers and soldiers, and a limited ability to interact with [the air force and navy] in combined operations.” Another analyst commented during the same session, “Away from rail lines and air fields, the lack of adequate logistical, transport, air defense, communications, armor and air support severely limits [ground force] capabilities.”¹²⁴

The PLA’s principal new ground force effort is focused on building two types of specialized, “rapid reaction” units. The first, *quantou* or “fist” units, are specially trained and equipped brigade-size (6,000 personnel), rapidly deployable units similar to the 82nd Airborne, or 101st Air Assault organizations in the United States. The second, *kuatsu* or “rapid response” units are larger, divisional size (15,000 personnel) units, which receive the most modern equipment and training and have “early entry” responsibilities. The primary mission of these units is to be prepared to deploy anywhere in China within twenty-four hours of notification.¹²⁵ The mobility of *quantou* and *kuatsu* unit has been greatly enhanced recently by the purchase of ten huge Russian-made Il-76 transport planes, which can carry 150 fully-equipped soldiers.¹²⁶ By forming these types of units, the China has created “pockets of excellence” within the ground forces, which the PLA plans to equip with newly purchased foreign equipment. Using this new equipment, the *quantou* and *kuatsu* units are supposed to develop new concepts of deployment, operations, and tactics and use them to train the rest of the PLA. Eventually, all of the 24 Group Armies will have their own *quantou* and *kuatsu* units, but for now they involve between 100 and 150 thousand personnel—a handful given the size of the PLA.

Despite some improvement in rapid deployment units, the overall improvement of the PLA is marginal, according to some evaluations. “Two decades of force modernization have provided only marginal improvements in mobility, firepower and logistical support.”¹²⁷ Other analysts argue that widely publicized exercises demonstrating new weapons and techniques (such as simultaneous deployment of forces from multiple services) should not be mistaken for a well-trained force with the doctrinal understanding of command-and-control capabilities essential to effective combined operations.¹²⁸

Missile and Nuclear Forces

China’s nuclear force is small, relatively primitive and vulnerable—far behind those of the United States or Russia in size and much less sophisticated than those of the United Kingdom or France.¹²⁹ Currently, less than half of China’s twelve to seventeen ICBMs are believed capable of covering the United States, though all could hit the West Coast.¹³⁰ At the time of President Clinton’s departure from his summit with Chinese leader Jiang Zemin, none of those missiles was targeted toward the United States.

Until recently, China’s nuclear deterrence strategy was to create a countervalue (city-busting) deterrent of sufficient size and range to guarantee that no state would use nuclear force against China without fear of retaliation. However, it is not clear that the Chinese fully subscribe to the concept of nuclear deterrence. Iain Johnston, Harvard professor and China watcher, suggests that Chinese strategists believe there is a wider utility to nuclear weapons than nuclear deterrence.¹³¹ Johnston contends that Chinese strategists may never have genuinely accepted minimum deterrence, but leaned toward some form of limited war-fighting or flexible response.”¹³² This would be a dangerous departure and bears close watching, especially now that both China’s former enemy India and current ally Pakistan possess nuclear weapons.

Beijing continues to increase the numbers of its missiles, though slowly, and has continued its efforts to improve their accuracy by incorporating data from global-positioning satellite systems and providing warheads with terminal guidance packages.¹³³ China is pushing ahead with programs to improve the survivability of its nuclear force and is developing a second generation of long-range nuclear-armed intercontinental ballistic missiles (DF-31, DF-41) and submarine-launched ballistic missiles ((JL-2) that will eventually be fitted with multiple warhead packages. These programs, like all weapons development programs in China, are behind schedule. Developing a smaller warhead has been particularly difficult.

Smaller warheads are also necessary for a truly “transportable” system that increases both submersibility and mobility, thus enhancing deterrence while helping to nullify any enemy preemptive first strike (a capability China does not have and has formally eschewed). For now, half or more of China’s strategic delivery vehicles (bombers and land-based missiles) remain vulnerable to surprise preemptive attack.¹³⁴

Short Arms—Slow Legs

“Short Arms-Slow Legs” is an idiom first used by a Chinese general to describe the PLA after he had analyzed the Gulf War. It is symbolic of the PLA’s present dilemma: they do not have the transportation to get to a fight; and even if they get there, they cannot hit anybody, unless their opponent has even shorter arms and slower legs than the PLA. “Short arms and slow legs” still aptly describes the PLA’s inability to perform effectively the tasks assigned to it by “limited war under high-technology conditions” doctrine.¹³⁵

The PLA is hampered in its development by a number of systemic problems. Funding is a major problem. When Deng Xiaoping instituted the “Four Modernizations” of agriculture, industry, science and technology, and national defense as the China’s core development

programs in 1978, national defense was the fourth priority and remains in that position.¹³⁶ Although the military budget is increasing, it is still inadequate for building a military that can satisfy Beijing's doctrinal requirements.

China's systems integration deficiencies limit its ability to produce indigenous weapons systems or incorporate foreign components into local designs.¹³⁷ Deficiencies in the integration of aircraft and warship combat systems are most problematic. The troubled J-10, China's next generation airframe, is a good example. Efforts to integrate a Chinese airframe, Israeli avionics, and a Russian power plant have come to naught.¹³⁸ Indeed, a related problem is that China has no experience at building power plants for modern aircraft and combatant ships. They must purchase sophisticated engines from foreign suppliers, which leaves them vulnerable to the vicissitudes of international politics and business. After the Tiananmen incident, the US stopped delivery on engines that were meant to power an indigenously produced fighter-bomber. Subsequently, the project was abandoned. Similarly, when Great Britain stopped producing Spey 202 engines in 1988, China had to put its JH-7 fighter project on hold. China had fifty of the 202s on hand, but without a source for spare parts, the project was forced to curtail production and is now trying to install Russian engines.¹³⁹ Also, production of the *Luhu*-class destroyer was curtailed after Tiananmen because China was denied access to the General Electric LM-2500. Two *Luhus* powered by four of the five LM-2500s that were sold to China before Tiananmen are afloat, but future production is dependent on finding another engine.¹⁴⁰

Historically, the Chinese have resorted to reverse engineering (cloning) to compensate for their technological shortfalls. After the Sino-Soviet split in the 1960s, most of the Chinese modernization successes were copies of Soviet prototypes. Recently, they have even been successful at reverse engineering a few imported weapon systems. In

particular, they have copied anti-aircraft weapons and some surface-to-air-missiles. However, most of their efforts to reverse engineer sophisticated systems have failed. Why? In layman's terms, consider the shade-tree mechanic in 1952, who could jury-rig or manufacture seventy per cent of the parts in a '52 Chevy truck with a metal lathe and a file. Then consider that same mechanic peering under the hood of a '98 Blazer? This is why there are not too many shade-tree mechanics left.

Technically speaking, Norman Friedman attributes China's reverse engineering problem to the fact that China missed the digital revolution. Mao, according to Friedman, was enamored of analog technology¹⁴¹ and China failed to go digital with the rest of the world. Digital technology is important for military command and control because digital computers can interface with lots of other digital computers. Digital computers can also establish priorities among themselves—which is important when a ship-board computer array is trying to determine which incoming bogie should be engaged first. Analog computers have difficulty exchanging simple data, much less prioritizing inputs and outputs.

These considerations apply to efforts to reverse engineer technology. "Once it has been disassembled, an analog system literally has no secrets left, except for the composition of its elements (a matter of chemistry or metallurgy)."¹⁴² A fully digital system is a very different proposition. "It may be almost impossible to recover the program (source code) which embodies and is central to the operation."¹⁴³ The F-16 aircraft has thirty-six on-board digital computers, many of which talk to one another and are protected by read-only chips. The difficulty the Chinese are having in reverse-engineering the F-16 the Pakistanis gave them is understandable.

Reverse engineering is just one step in trying to move to ultra-high-tech mass production, which in turn requires a proper economic, financial, technical, educational and even cultural (work ethic)

infrastructure that could very likely be a generation away in China. . . . And even if success is achieved after a 15-or-20-year process, the yield will still be poor quality equipment with huge maintenance problems and a product two to three decades out of date.¹⁴⁴

The legacy of the Cultural Revolution has hindered China's ability to produce technologically advanced military equipment. Worried about China's possible "revisionist" drift in the mid 1960s, Mao launched the Cultural Revolution to clear the way for a more egalitarian and participatory society.¹⁴⁵ Anarchy prevailed in China for a decade as Mao encouraged radical ideologues to search out and destroy revisionist "representatives of the bourgeoisie." Among the long list of "suspects" were the scientists, inventors, nuclear physicists, and teachers. Consequently, all of the design teams from the Chinese nuclear and other advanced weapons and engineering projects were purged and destroyed and the Chinese technical school system was shut down for a decade.¹⁴⁶ Everybody with a technological, scientific, or computational skill was suspect. Many were killed, and others languished in prison or under house arrest for up to ten years. Worse, a whole generation of students was lost because the schools were shut down. Instead, those of student age "went to the countryside" to help the peasants build socialism. The Chinese call the Cultural Revolution the lost decade and it could not have come at a worse time. While China retrogressed in anarchy, the rest of the industrial world advanced technologically at an exponential rate. China not only did not keep up, it fell further behind and still has yet to recover.

Compensating for Technological Inferiority—Pockets of Excellence

China's budget constraints, technological shortcomings and the effects of the Cultural Revolution have prevented Beijing from completing a comprehensive modernization campaign to field a force on the scale of the one that won Desert Storm. Instead, PLA leaders have been forced to

pursue selective modernization and have made specific improvements in naval, air and ground force capabilities that will enable the PLA to maintain credibility in the region. Specifically, the Chinese need a credible enough force to enforce Chinese claims in the South China Sea and convince the populace on Taiwan not to declare independence.¹⁴⁷ The PLA has operationalized this goal by creating “pockets of excellence” in all the services. These are based on the “fist” and “rapid deployment” models instituted by the PLA’s ground forces in the late 1980s.¹⁴⁸ The most noteworthy aspect of the pockets of excellence program has been the selective purchase of equipment from abroad for the Chinese air force and navy to quickly compensate for the most serious shortcomings in China’s military capabilities.¹⁴⁹

Compensating for Technological Inferiority—the Russian Connection

“Although ties with some Western arms manufacturers are slowly being resuscitated, including China’s cooperation with Israel’s military industries, Russia now plays the central role in China’s military modernization programs.”¹⁵⁰ The decision to import Russian military equipment suggests an acceptance that indigenous designs are inadequate.¹⁵¹ In fact, the Chinese contend they have saved 15-20 years in research and development time and hundreds of millions of dollars by purchasing weapons systems, technology, and technical assistance from the Russians.¹⁵² At present, China is taking advantage of the struggling Russian economy and arms industry by buying modern Russian equipment at bargain rates.¹⁵³

Russia admits that its arms industries suffered a severe blow when the USSR collapsed. Neither domestic requirements nor a shaky economy can support the massive military industrial base Russia inherited from the Soviet Union. Exporting weapons, equipment and technology can ease the plight of Russia’s arms industries as they undertake conversion to civil products, and scientists can be employed in China.¹⁵⁴

Current estimates put the number of Russian military scientists working in China at more than 1,500. Each of these experts can earn \$ 300 a month in the PRC, almost twenty-five times higher than their salaries in Russia.¹⁵⁵

In addition to the SU-27 aircraft and Kilo-class submarines mentioned previously, the Chinese have also purchased S-300 surface-to-air anti-aircraft missiles, sophisticated aircraft-mounted radars, and two *Sovremenny*-class destroyers with their effective SS-N-22 ship-to-ship missiles.¹⁵⁶ Of most concern are reports that Russia has allowed China to recruit an entire cruise missile research-and-development team.¹⁵⁷ Effective cruise missiles in China's hands would dramatically increase the precision of China's missile targeting. With cruise missiles, China would be able to selectively pinpoint targets on Taiwan and engage US aircraft carriers up to 2,000 kilometers from China's shore.¹⁵⁸ If China had possessed an effective cruise missile capability, the March 1996 situation might have turned out differently. China could have kept US aircraft carriers at bay while hitting selected targets in Taiwan to get their point across.

How quickly the purchases from Russia will allow China to accelerate its defense modernization is unknown, but two factors might limit the acceleration. First, it remains to be seen how much technology Russia will be willing to transfer to China.¹⁵⁹ Even now, there are reports that some Russian leaders are beginning to question the logic of selling sophisticated weapons systems to China.¹⁶⁰ Second, the Chinese have a poor history when it comes to purchasing systems and technology for advanced military applications. In the late 19th century Beijing's "self-strengthening" movement attempted to advance China into modernity by selectively adapting elements of Western learning and technology to China's requirements.¹⁶¹ The movement was a failure, as China's defeat at the hands of the Japanese in the Sino-Japanese War (1894-1895)

showed. Over the past couple of decades the modern version of Chinese “self-strengthening” has been the reliance on reverse-engineering foreign weapons systems. And as previously pointed out, the modern version of self-strengthening has not worked very well, either.

Unfortunately for Chinese military planners, “limited war under high-technology conditions” has created requirements for technologies that the Chinese technology base cannot develop and the industrial base cannot yet produce. Overcoming these deficiencies will be difficult. Imports and “pockets of excellence” organizations will enable China to meet some of its regional security objectives, but the imports are not in sufficient quantity or sophistication, and the “pockets of excellence” too few and too small to threaten the US.

Also, while China is trying to catch up, sophisticated military technologies are spreading in Asia and accelerating in the United States. Indeed, it does not seem likely in the next several decades that China will overcome its endemic weaknesses including: budget constraints, inability to master systems integration and manufacture power plants, and overcoming the legacy of the Cultural Revolution. Unless of course, China could skip expensive stages of force structure modernization by “leaping its way to parity.”

FUTURE DOCTRINE: GREAT LEAP OR MUCH ABOUT NOTHING

Some analysts believe that China may be trying to “leap its way to parity” with the West by skipping stages in the evolutionary development of weapons systems and supporting doctrine. Nigel Holloway of the *Far Eastern Economic Review* recently published an overview of China’s attempts to modernize its armed forces directly into the information age.¹⁶² According to Holloway, the conventional wisdom in the West, which portrays the PLA as a slow dinosaur, may be wrong. This new assessment is based on some 40 essays and speeches on future warfare by

senior Chinese military officers and strategists. These were recently translated and published in *Chinese Views of Future Warfare*, edited by Michael Pillsbury, an Associate Fellow at the National Defense University.

In recent testimony before Congress, Pillsbury described several asymmetrical approaches the Chinese might take against the US or other adversaries. For example, they might seek to defeat a more powerful (i.e., US) navy by using shore-based missiles and aircraft instead of developing a large (symmetrical) naval fleet.¹⁶³ “As land-based weapons will be sharply improved in reaction capacity, strike precision, and range, it will be possible to strike formations at sea, even individual warships.”¹⁶⁴ Other asymmetrical approaches range from “magic weapons” like tactical lasers for use in anti-ship missiles to “nanotechnology weapons” that will target US dependence on “information superhighways.”¹⁶⁵ In addition to lasers, ultra-high-frequency, ultrasonic wave, stealth, and electromagnetic weapons were listed as new-concept weapons for the future. Attacking the “vital” points of the enemy’s information and support systems seems to be the common theme of the new Chinese thinking; enemy paralysis and loss of the will to fight seems to be the common objective. Targets could include electrical power systems, civilian aviation systems, transportation networks, seaports and shipping, highways, television broadcast systems, and computer and telecommunications systems. .

Clearly the offerings in *Chinese Views of Future Wars* are, as the title implies, merely views. Missing in this collection of articles is any description of how the transition will be made from what the Chinese now have to the new, “revolution in military affairs (RMA)”-type technology.¹⁶⁶ Also missing is any description of how the Chinese plan to overcome the obstacles preventing them from getting ahead of the US in fielding and exploiting these advanced concepts. Instead, asserts Dr. Pillsbury, “there is almost a magical thinking or wishing away of these

obstacles.”¹⁶⁷ Still, argues Pillsbury, these authors should not be ignored. It should be possible in the next five years to identify the development by China of asymmetrical capabilities that deviate from established norms.

Paul Dibb, an Asian security expert in Australia, notes that the Chinese have been very interested in the RMA since the Gulf War.¹⁶⁸ However, the PLA has not made any fundamental shift in its ability to acquire and operate key elements of the RMA in an integrated, joint-force environment, and will not be able to within the next decade. According to Dibb, China will be able to make some technology leaps by eschewing high investment in military platforms and by concentrating instead on potent technologies such as supersonic or stealthy subsonic cruise missiles. Also, China’s easy access to commercially available combined global positioning systems (GPS) and inertial guidance systems could greatly improve the terminal accuracies of the PLA’s weapons systems. Additionally, low-observable technologies (measures to reduce radar and infrared signatures) could become a more prominent feature of the new cruise missiles China is trying to produce or purchase.¹⁶⁹

However, Dibb concludes that China is not in a position to take advantage of the RMA. First, China’s systems integration problems hinder its ability to take advantage of RMA technologies. Second, the heart of RMA technologies is information, and the Chinese lag behind the advanced world in information processing technologies.

China is still inhibited by problems including Chinese-language processing and the difficulty of introducing more advanced software-engineering and systems-analysis techniques, as well as a constant “brain drain” to the private sector and foreign joint ventures. China lags behind advanced countries in developing large computer systems and networks: access to the advanced computing facilities required for sophisticated software in the military sector appears to be extremely limited. The software-engineering systems (for example, fourth-generation languages and

software-production methodologies) needed to ensure adequate quality are lacking.¹⁷⁰

Clearly, capitalizing on the RMA would be in China's interest and in keeping with China's strategic culture. The ability to leapfrog generations of weaponry and doctrine would have a major cost benefit and adhere to China's age-old doctrine of "defeating a stronger enemy with a weaker force." However, the PLA faces a range of difficulties which will impede its ability to fully exploit the potential of the information-based RMA.

Recent studies of military innovation suggest that it may take several generations to institutionalize innovation. "Similarly, some of the literature on the current RMA suggests that a full exploitation of new capabilities can take decades. Given these insights and the Chinese military's disadvantages with regards to the current RMA, an effort by the PLA to exploit the potential it offers is likely to be a long-term undertaking."¹⁷¹

CONCLUSION

China is an emerging power that wants to recapture its glory by once again becoming the regional hegemon in Asia. The past decade has seen the PLA radically change its military doctrine to achieve that objective. This has upset many analysts in Asia and the West who view China's rising power and more expansive military doctrine as potentially threatening. These analysts contend that China is more secure now than at any time in modern history and cannot understand why its military doctrine stresses offensive capabilities. Moreover, they wonder why China's military budgets continue to increase, while those of every other major power decline.

Critics of China's military budget and doctrine are correct on two counts. China's defense spending has doubled twice in ten years and its present military doctrine, "limited war under technological

conditions,” continues a trend of expansion dating back to the early 1950s. These areas of concern deserve attention and close scrutiny. However, critics of China’s military strategy overstate the relevance of China’s defense spending increases and overestimate the PLA’s ability to achieve the intent of Beijing’s military doctrine.

In fact, no one knows exactly what China’s defense budget really is, not even the Chinese. Guesses fluctuate between \$8 and \$86 billion, however most China analysts believe the actual figure is close to \$35 billion. In any case, there are mitigating circumstances that help keep China’s increased spending in perspective. First, after inflation is accounted for, Chinese defense spending has probably increased 13% since 1985, a modest amount when considering the low Chinese military budgets of the 1980s. Second, when measured in per capita terms or percentages of GNP relative to other powers and China’s neighbors, Chinese defense spending does not look onerous. In the United States per capita defense spending is over \$ 900; in China it is \$ 40.

Conceptually, the PLA’s new doctrine, “limited war under technological conditions” is suited to achieving Beijing’s objectives. However, the PLA does not now have, nor has it ever had, the wherewithal to carry out the doctrine’s intent. China’s goal of becoming a genuine power and regional hegemon in the new century seems quite likely, but it remains a distant goal to be achieved perhaps in the middle of the century. China’s deficiencies in systems integration, manufacturing propulsion systems, and advanced computer technologies will be the most limiting factors in the PLA’s ability to field the weapons and equipment necessary to satisfy strategic doctrine requirements. Purchasing military hardware and technological know-how from foreign sources will help, continuing to rely on reverse engineering will not.

China’s navy has only limited power-projection capability, given the absence of aircraft carriers, and it lacks any real ability to deal with the power projected by the carrier-centered battle groups maintained

by the US. A common, though unsupported, rumor during the 1996 Taiwan Strait confrontation revealed that the two US aircraft carrier battle groups off Taiwan possessed, together, more combat power than the Chinese military had in all of Coastal China. China's air force is a collection of old, outdated fighters and bombers that are mostly ready for the junk heap. China has never been able to produce an indigenous fighter or bomber, and joint production efforts with other countries have not been fruitful. The weakness of China's airlift capability and the inability by the PLAAF to provide air cover for ships at sea also remain hindrances to mobility and power projection. The Chinese army is an oversized, infantry-heavy force that cannot get to where it needs to go, when it needs to get there, and do what it is supposed to do. Simply stated, the PLA has "short arms and slow legs." All the Chinese services have difficulty working together and derive no synergy from conducting combined arms operations.

China has taken some positive steps toward force modernization. Beijing's decision to reduce the Chinese military by one million personnel will do much to streamline the bloated force and be a positive sign to the world public. Devoting increased funding and emphasis to "pockets of excellence" in the PLA, PLAN, and PLAAF, will enable the Chinese military to address contingencies against regional adversaries, but the "pockets" will be too few and will not be technologically advanced enough to threaten the United States. Also, even if China's military modernization program overcomes the many challenges described in this paper, the PLA it fields in the second or third decade of the next century will be what was considered state of the art in the early 1990s.

Finally, there is no silver bullet for China. China will not be able to leapfrog US or other major powers' capabilities by employing asymmetrical, "magic" or "nanotechnology" weapons against the West. China's lack of computer and systems integration sophistication and

other technological shortcomings will continue to hinder its military's ability to take advantage of the RMA well into the future. In fact, the RMA will continue to support the assertion of US military predominance. The PLA's arms may get longer, and its legs faster, but it will take a long, long time before China's military rivals the world's only superpower's.

ENDNOTES

¹ John J. Shulz, "China as a Strategic Threat: Myths and Verities," *Strategic Review* (Winter 1998), 5.

² Alister Iain Johnston, "China's Militarized Interstate Dispute Behavior 1949-1992: A First Cut at the Data," *China Quarterly* no. 153 (March 1998), 29.

³ Jijun Li, "Traditional Military Thinking and the Defensive Strategy of China," *The Letort Papers* (Carlisle Barracks: Strategic Studies Institute, Aug. 29, 1997), 3-4.

⁴ *Ibid.*, 6.

⁵ Karl W. Eikenberry, "Does China Threaten Asia-Pacific Regional Stability," *Parameters* 25, no. 1, (Spring 1995), 82.

⁶ David Shambaugh, "China's Military: Real or Paper Tiger?" *The Washington Quarterly* 19, no. 2, (Spring, 1996), 21.

⁷ Shulz, 6.

⁸ *Ibid.*

⁹ Eikenberry, 83.

¹⁰ Richard A. Bitzinger and Bates Gill, *Gearing Up for High-Tech Warfare? Chinese and Taiwanese Defense Modernization and the Implications for Military Confrontation Across the Taiwan Strait, 1995-2005*. (Washington D.C.: Center for Strategic and Budgetary Assessments, 1996), 14.

¹¹ *Ibid.*

¹² Joseph Nye, "China's Re-emergence and the Future of the Asia-Pacific," *Survival* 39, no. 4 (Winter 1997-98), 68. See also Andrew Nathan and Robert Ross, *The Great Wall and the Empty Fortress* (New York: Norton, 1997), 148.

¹³ *Ibid.*, 15.

¹⁴ Richard Bernstein and Ross H. Munro, "The Coming Conflict With China," (New York: Alfred A. Knopf, 1997), 72.

¹⁵ Bitzinger, 15.

¹⁶ Kristof, 66. Purchasing power parity is not exact science and there are many different opinions about the multiplier effect. Most analysts use a multiple of three for China based on the latest economic data. When originally conceived by the World Bank, the multiplier was over 5. The World Bank calculated China's 1991 PPP by adjusting China's per capita GNP of \$370 and adjusting it to reflect what that amount could buy in international prices. They determined that \$370 in China could purchase the equivalent of \$1,860 worth of goods in the West. Thus the multiples of 5.3.

¹⁷ Shu-Shin Wang, "Military Development of the People's Republic of China After the 1989 Tiananmen Massacre," (Taipei, Taiwan: Chinese Council of Advanced Policy Studies, 1994), 95.

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- ¹⁸ Yitzhak Shichor, "China's Defense Capability: The Impact of Military-to-Civilian Conversion," (Taipei, Taiwan: Chinese Council of Advanced Policy Studies, 1995). 10.
- ¹⁹ Shu-Shin Wang, 96.
- ²⁰ Ibid., 95.
- ²¹ Eikenberry, 85.
- ²² See Montaperto, 3.
- ²³ Montaperto, 4.
- ²⁴ Norman A. Graham, "China and the Future of Security Cooperation and Conflict in Asia," *Journal of Asian and African Studies* 33, no. 1 (Spring 1998), 101.
- ²⁵ Eikenberry, 85. Op. cit., International Institute of Security Studies, *The Military Balance 1993-1994* (London: Brassey's, 1993), 224 and 226.
- ²⁶ Paul H. B. Godwin, "Military Technology and Doctrine in Chinese Military Planning: Compensating for Obsolescence," in *Military Capacity and the Risk of War* ed. Eric Arnet (Stockholm: Oxford University Press, 1997), 39.
- ²⁷ Ibid.
- ²⁸ Godwin, "China: Compensating for Obsolescence," 41.
- ²⁹ Donald H. McMillen, *Chinese Communist Power and Policy in Xinjiang, 1949-1977*, (Boulder: Westview Press, 1979), 15.
- ³⁰ Ibid.
- ³¹ Li Jijun, "Traditional Military Thinking and the Defensive Strategy of China," *The Letort Papers*, no. 1 (Carlisle Barracks: US Army War College, Strategic Studies Institute, 29 April 1997), 3.
- ³² Gerald Segal, *Defending China* (London: Oxford University Press, 1985), 29.
- ³³ Ibid.
- ³⁴ Haichen Sun, *The Wiles of War—36 Military Strategies from Ancient China*, (Beijing: Foreign Languages Press, 1991), ii.
- ³⁵ Di Hua, "Threat Perception and Military Planning in China: Domestic Instability and the Importance of Prestige." In *Military Capacity and the Risk of War*, ed. Eric Arnett (Stockholm: Oxford University Press, 1997), 25.
- ³⁶ Dennis and Ching Bing Bloodworth, *The Chinese Machiavelli—3,000 Years of Chinese Statecraft* (New York: Farrar, Straus, and Giroux, 1976), 105. Taken from *Selected Military Writings of Mao Tse-tung* ("Problems of Strategy in China's Revolutionary War").
- ³⁷ Ellis Joffe, *The Chinese Army After Mao* (Cambridge, MA: Harvard University Press, 1987), 35.
- ³⁸ Norman Friedman, "Chinese Military Capacity: Industrial and Operational Weaknesses," in *Military Capacity and the Risk of War*, ed. Eric Arnett (Stockholm: Oxford University Press, 1997), 62.
- ³⁹ Montaperto, 3.

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- ⁴⁰ I am told that Harrison Salisbury uses this quote in *War Between Russia and China* though I cannot find it in the book.
- ⁴¹ *The Chinese Armed Forces Today*, a reprint of *The US Defense Intelligence Agency Handbook of China's Army, Navy and Air Force* (Englewood Cliffs: Prentice-Hall, 1976), 14.
- ⁴² Shu, p. 258.
- ⁴³ Gerald H. Corr, *The Chinese Red Army* (Berkshire: Osprey, Ltd., 1974), 141. See also Joffe, 5.
- ⁴⁴ Joffe, 5.
- ⁴⁵ Paul H. B. Godwin, "China's Security Policy Enters the 21st Century: The View From Beijing," *Asian Security to the Year 2000*, ed. Dianne L. Smith (Carlisle Barracks: Strategic Studies Institute, Dec. 15, 1996), 45.
- ⁴⁶ Ibid.
- ⁴⁷ Ibid.
- ⁴⁸ Paul H. B. Godwin, "Peoples' War Revised: Military Doctrine, Strategy, and Operations," *China's Military Reforms, International and Domestic Implications*, eds. Charles D. Lovejoy, Jr. and Bruce W. Watson (Boulder: Westview Press, 1986), 9-11.
- ⁴⁹ Paul H. B. Godwin, "Military Technology and Doctrine in Chinese Military Planning: Compensating for Obsolescence," in *Military Capacity and the Risk of War* (Stockholm: Oxford University Press, 1997), 41.
- ⁵⁰ Segal, 219.
- ⁵¹ It was a draw on the ground, but China's objectives—to teach Vietnam and the Soviet Union lessons—were not achieved, so it counts as a loss in my book. I was in Beijing when the Chinese went into Vietnam, and there was euphoria in the streets. Within a week the euphoria had evaporated, and after two weeks no one would talk about the conflict. I also got as far south as Nanning during the hostilities. There was no euphoria there, either, just long faces. It was in Nanning that I learned that the PLA Air Force never left the airfield. There was no air support for the Chinese incursion into Vietnam.
- ⁵² Segal, 219.
- ⁵³ Jim Doyle, "Changing Face of China's Army: China's Military Forces Face Cut of 1 Million," *Army Times*, 23 Jun., 1986, 20.
- ⁵⁴ Ibid.
- ⁵⁵ William T. Tow, "Science and Technology in China's Defense." *Problems of Communism* (July/August 1985), 15-31.
- ⁵⁶ Lonnie Henely, *China's Capacity for Achieving a Revolution in Military Affairs*. Paper prepared for the Annual Strategy Conference, US Army War College "China in the 21st Century: Strategic Partner and—or Peer Competitor," 23-25 April 1996.
- ⁵⁷ Ibid.
- ⁵⁸ Godwin, "China's Security Policy Enters the 21st Century: The View From Beijing," 47.

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- ⁵⁹ Nan Li, 446.
- ⁶⁰ Ibid.
- ⁶¹ Ibid.
- ⁶² Godwin, "From Continent to Periphery," 467.
- ⁶³ Ibid., 47.
- ⁶⁴ Ron Montaperto, "China as a Military Power," *Strategic Forum* no. 4 (December 1995), 2. See also Wang Zhongchun, "Changes and Development of China's Peripheral Security Environment and Its Defense Policy," in *China's Transition into the 21st Century—US and PRC Perspectives* (Carlisle, PA: US Army War College, Strategic Studies Institute, Jul. 29, 1996), 31.
- ⁶⁵ Godwin, "China's Security Policy Enters the 21st Century," 48. Godwin makes the point that the sanctions after Tiananmen were compensated for by an equipment purchase program with cash starved Moscow.
- ⁶⁶ Shambaugh, 25.
- ⁶⁷ Montaparto, 3.
- ⁶⁸ Suzanne Nielson, "The PLA and the RMA," Paper for Sam Huntington, Harvard University (Dec. 1997), 29.
- ⁶⁹ Shoulong Chu, "The PRC Girds for Limited, High-Tech War," *Orbis* 38, no. 2 (Spring 1994), 164.
- ⁷⁰ Shambaugh, 27.
- ⁷¹ Based on the author's last trip to Beijing, April 1997.
- ⁷² Bitzinger, 10.
- ⁷³ Ibid.
- ⁷⁴ Based on interviews at seven think tanks in Beijing in April 1997.
- ⁷⁵ Shambaugh, 24.
- ⁷⁶ Kristof, 66.
- ⁷⁷ Nye, 69.
- ⁷⁸ Ibid.
- ⁷⁹ Op. cit. Joseph Anselmo, "China's Military Seeks Great Leap Forward," *Aviation Week and Space Technologist*, vol 146, no. 20, (12 May, 1997), 68.
- ⁸⁰ Ibid., 26.
- ⁸¹ Bitzinger, 9.
- ⁸² Shambaugh, 26. Shambaugh lists the J-6 as the Chinese version of the MiG 23. In fact, it is the MiG 21.
- ⁸³ Ibid.
- ⁸⁴ Ibid.
- ⁸⁵ Godwin, "From Continent to Periphery," 478.
- ⁸⁶ Ibid.
- ⁸⁷ Goldstein, 45.
- ⁸⁸ Godwin, "China, Compensating for Obsolescence," in *Military Capacity and the Risk of War* ed. Eric Arnett (Stockholm: Oxford University Press, 1997), 49.

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- ⁸⁹ Shulz, 7.
- ⁹⁰ Godwin, "From Continent to Periphery," 480.
- ⁹¹ Ibid, 480.
- ⁹² Shambaugh, 26.
- ⁹³ Ibid. In 1979, when I worked in China, there was a persistent rumor in Beijing that the Chinese had cloned a Boeing 707 from one that they had purchased from Boeing. Supposedly, it crashed on takeoff the first day of flight testing.
- ⁹⁴ Paul H. B. Godwin, "Military Technology and Doctrine in Chinese Military Planning: Compensating for Obsolescence," in *Military Capacity and the Risk of War* ed. Eric Arnett (Stockholm: Oxford University Press, 1997), 46.
- ⁹⁵ Ibid., 47.
- ⁹⁶ Ibid.
- ⁹⁷ Goldstein, 46.
- ⁹⁸ Godwin, "China: Compensating for Obsolescence," 49.
- ⁹⁹ Ibid.
- ¹⁰⁰ Ibid.
- ¹⁰¹ Shulz, 7.
- ¹⁰² Ibid.
- ¹⁰³ Goldstein, 46.
- ¹⁰⁴ Godwin, "China: Compensating for Obsolescence," 49.
- ¹⁰⁵ Ibid., 50.
- ¹⁰⁶ Ibid.
- ¹⁰⁷ At 300 miles, the combat aircraft in China's inventory would have about a "five minute" window where they could actually engage in combat.
- ¹⁰⁸ Godwin, "From Continent to Periphery," 474. The Luhv displaces 4,500 tons and is the largest combatant vessel in China's fleet. By comparison, the *Franklin Roosevelt* aircraft carrier displaces 90,000 tons.
- ¹⁰⁹ Ibid.
- ¹¹⁰ Ibid.
- ¹¹¹ Michael H. Orfini, "China & Taiwan: A Naval Focus From a US Perspective," Manuscript for the Center for International Affairs, Harvard University (Jun. 1996), 5.
- ¹¹² Ibid.
- ¹¹³ Ibid.
- ¹¹⁴ Ibid., 6.
- ¹¹⁵ Shulz. 8.
- ¹¹⁶ Ibid.
- ¹¹⁷ Goldstein, 49.
- ¹¹⁸ Ibid.
- ¹¹⁹ Godwin, "China: Compensating for Obsolescence," 51. See also Shulz, 8.
- ¹²⁰ Ibid., 54.

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- ¹²¹ Ibid.
- ¹²² Goldstein, 47-48.
- ¹²³ Ibid. 55. See also Shulz, 10.
- ¹²⁴ Shulz, 10.
- ¹²⁵ Godwin, "From Continent to Periphery," 482.
- ¹²⁶ Shulz, 11.
- ¹²⁷ Ibid., 10.
- ¹²⁸ Goldstein, 37.
- ¹²⁹ Shulz, 11.
- ¹³⁰ Ibid.
- ¹³¹ Iain Johnston, "China's New 'Old Thinking,'" in *East Asian Security*, eds. Michael E. Brown, Sean M. Lynn-Jones, and Steven E. Miller (Cambridge, MA: The MIT Press, 1996), 195.
- ¹³² Ibid.
- ¹³³ Goldstein, 50.
- ¹³⁴ Shulz, 11.
- ¹³⁵ Godwin, "China: Compensating for Obsolescence," 43.
- ¹³⁶ Ibid., 40.
- ¹³⁷ Paul Dibb, "The Revolution in Military Affairs and Asian Security," *Survival* 39, no. 4 (Winter 1997-98), 103 and 110.
- ¹³⁸ Ibid. 99.
- ¹³⁹ Ibid., 47.
- ¹⁴⁰ Godwin, "From Continent to Periphery," 475.
- ¹⁴¹ Norman Friedman, "Chinese Military Capacity: Industrial and Operational Weaknesses," in *Military Capacity and the Risk of War*, 67.
- ¹⁴² Ibid.
- ¹⁴³ Ibid.
- ¹⁴⁴ Shulz, 12.
- ¹⁴⁵ Gao Yuan, *Born Red* (Stanford: Stanford University Press, 1987), xv.
- ¹⁴⁶ Friedman, 63.
- ¹⁴⁷ Monteparto, 1.
- ¹⁴⁸ Goldstein, 45.
- ¹⁴⁹ Ibid., 44.
- ¹⁵⁰ Godwin, "China: Compensating for Obsolescence," 44.
- ¹⁵¹ Wendy Frieman, "Arms Procurement in China: Poorly Understood Processes and Unclear Results," in *Military Capacity and the Risk of War*, ed. Eric Arnett (Stockholm: Oxford University Press, 1997), 82.
- ¹⁵² Spence, 216.
- ¹⁵³ Stephen Blank, *The Dynamics of Russian Weapons Sales to China* (Carlisle Barracks: U.S. Army War College Strategic Studies Institute, Mar. 4, 1997), 1-6. (<http://www.milnet.com/milnet/rusmil97/ruswepp1.htm>)
- ¹⁵⁴ Godwin, "China: Compensating for Obsolescence," 45.
- ¹⁵⁵ Yang, 79.

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- ¹⁵⁶ “Russian Imports Step in to Fill the Arms Gap,” *Jane’s Defense Weekly*, vol. 28 no. 23, Dec. 10, 1977, 27-29.
- ¹⁵⁷ Ibid. 13. See also Bill Gertz, “China’s Arsenal Gets a Russian Boost,” *Washington Times*, May 20, 1996, 1.
- ¹⁵⁸ Ibid., 7.
- ¹⁵⁹ Frieman, 82.
- ¹⁶⁰ Ibid. 4.
- ¹⁶¹ Spence, 216.
- ¹⁶² Nigel Holloway, “Revolutionary Defense,” *Far Eastern Economic Review*, Jul. 24, 1997, p. 24.
- ¹⁶³ Michael Pillsbury, *Chinese Views of Future Warfare: Implications for the Intelligence Community*. Testimony before the Select Committee on Intelligence, September 18, 1997. (<http://www.herald.com/extra/archive/chinarep.htm>, Nov. 14, 1997, 8.)
- ¹⁶⁴ Ibid.
- ¹⁶⁵ Ibid. 1-9.
- ¹⁶⁶ Ibid. 12.
- ¹⁶⁷ Ibid.
- ¹⁶⁸ Dibb, 96.
- ¹⁶⁹ Ibid., 99.
- ¹⁷⁰ Ibid., 193
- ¹⁷¹ Suzanne Nielson, “The PLA and the RMA,” term paper, Harvard University, December 19, 1997, 59.
